



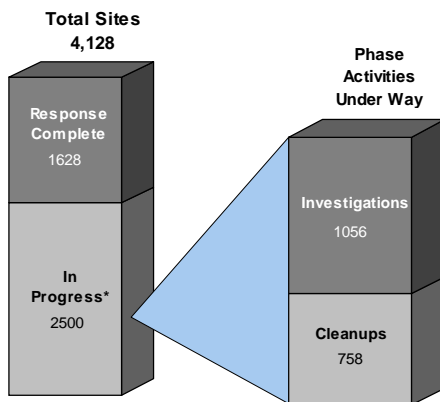
FUDS

CLEANUP STATUS AND PROGRESS

"THE FUDS PROGRAM FACES AN INCREDIBLE CHALLENGE OF TAKING OLD, ABANDONED MILITARY PROPERTIES THAT SERVED THE NATION PROUDLY IN TIMES OF WAR AND RESTORING THEM TO PROFITABLE USE AND REVITALIZATION. CLEANING UP THESE PROPERTIES IS A CHALLENGE THAT THE U.S. ARMY CORPS OF ENGINEERS MEETS HEAD-ON, DRAWING UPON ITS EXPERTISE AS THE WORLD'S PREMIER ENGINEERING ORGANIZATION AND ITS LEADERSHIP WITHIN THE DEPARTMENT OF DEFENSE AND THE ARMY IN THE ENVIRONMENTAL ARENA."

—RAYMOND J. FATZ, DEPUTY ASSISTANT SECRETARY OF THE ARMY

FUDS Status as of September 30, 1997



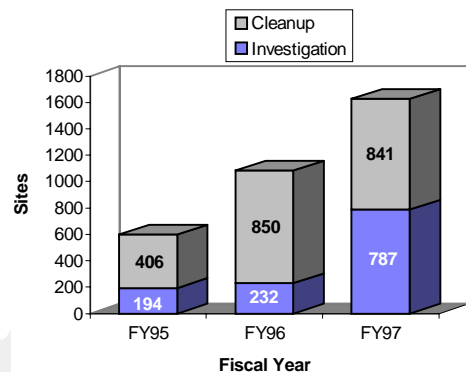
* NOTE: IN-PROGRESS INCLUDES SITES THAT WILL BE UNDER WAY IN THE FUTURE. THEREFORE, TOTALS OF SITES WITH PHASE ACTIVITIES UNDER WAY ARE GENERALLY LESS THAN THE TOTAL NUMBER OF SITES IN PROGRESS.

The Department of Defense (DoD) is responsible for cleaning up properties that were formerly owned, leased, possessed, or operated by DoD. Such properties are known as Formerly Used Defense Sites (FUDS). The Army is the executive agent for the program, and the U.S. Army Corps of Engineers (USACE) is the executing agent that manages and executes the program. Because DoD no longer owns

the FUDS properties, a USACE district effectively serves as the installation commander charged with executing environmental cleanup projects and associated responsibilities.

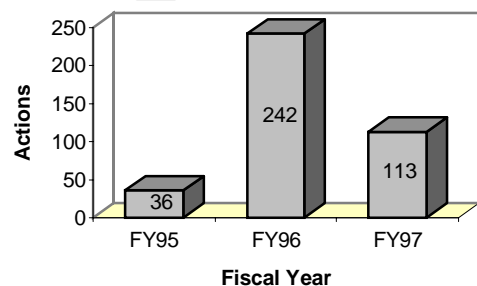
The scope and magnitude of the FUDS program are significant, with 9,078 properties identified for potential inclusion in the program. Environmental cleanup procedures at FUDS are similar to those at active DoD installations. However, information about the origin and

FUDS with Response Complete



extent of contamination, land transfer issues, past and present property ownership, and program policies must be evaluated before DoD considers a property eligible for the FUDS program.

Cumulative Interim Actions Completed at FUDS



In fiscal year 1997 (FY97), 38 properties were added to the FUDS inventory, and Preliminary Assessments (PA) were completed at 96 properties. Overall, 94 percent, or 8,530, of the 9,078 properties have been evaluated through the PA process, and 2,541 properties have been identified as requiring environmental response actions. On the 2,541 eligible properties, 4,128 potential cleanup projects have been identified, and 1,628 of these projects have been completed. The total cost to complete the remaining 2,500 projects is estimated at \$8.2 billion (FY98-Completion; does not include the required cost of management and support).

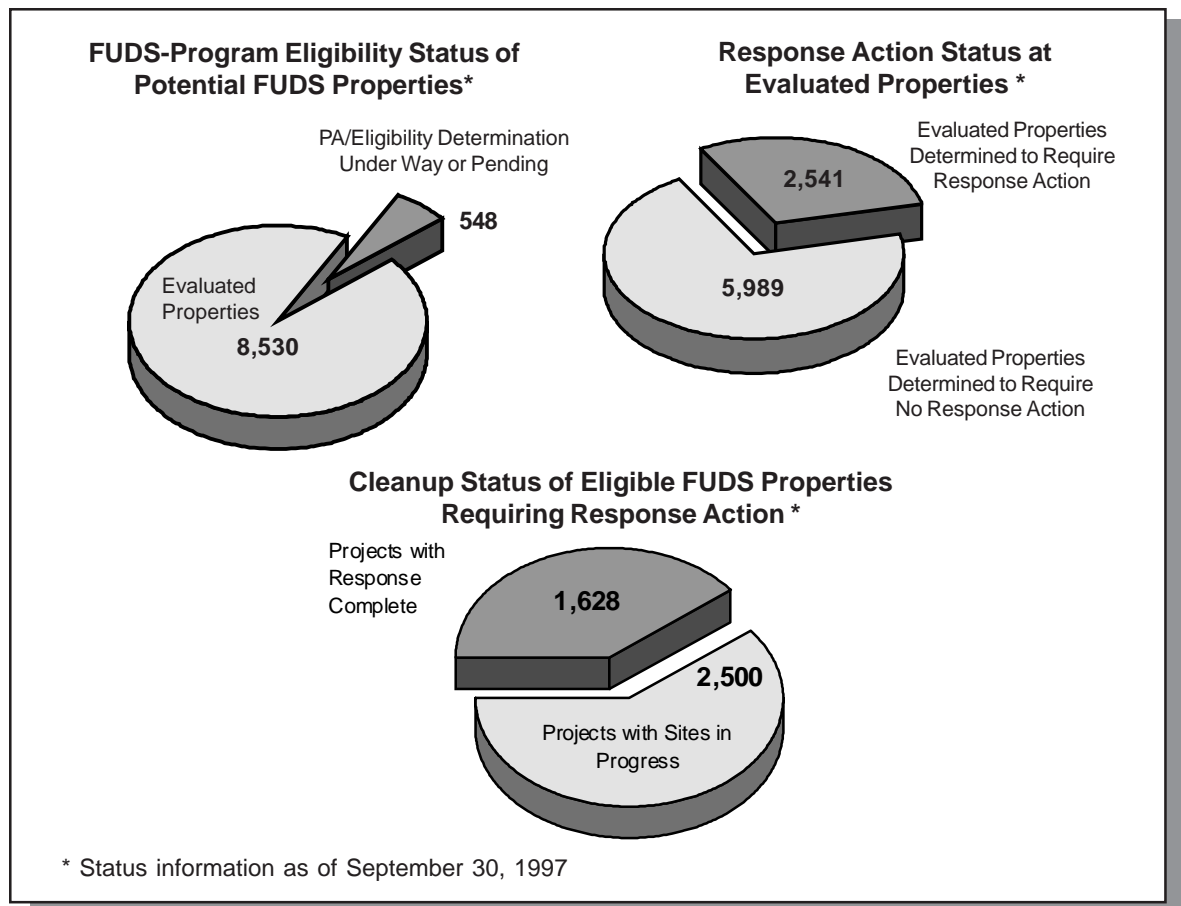
FUDS project categories include hazardous, toxic, and radioactive wastes (HTRW); ordnance and explosives wastes (OEW); containerized HTRW (CON/HTRW), such as removal of underground storage tanks; building demolition and debris removal (BD/DR); and potentially responsible party (PRP) actions.

During FY97, the FUDS program took steps to expand its community outreach program by initiating restoration advisory board (RAB) training for more than 100 project and program managers and public affairs officers and by producing a 14-minute video about the FUDS program. In addition, because of the unique nature of the FUDS program, USACE regularly responds to congressional inquiries about both the program and specific projects. Objects of congressional interest in FY97 include the former Amarillo Air Force Base, Texas; former Ellyson Field, Florida; former Massabesic National Guard Target Range, New Hampshire; former Marion Engineering Depot, Ohio; former Lake Ontario Ordnance, New York; former San Bernardino Engineering Depot, California; and projects in Nanakuli, Oahu, Hawaii. A milestone in FY97 was the delisting of the former Olmsted Air Force Base in Harrisburg, Pennsylvania, from the U.S. Environmental Protection Agency's (EPA) National Priorities List. The Olmsted property,

which was once used for engine and aircraft testing, was found to be contaminated with a number of chemicals. Tests at the property also revealed groundwater contamination. USACE Baltimore District supported EPA's recommendation for a water treatment system and oversaw the removal of storage tanks, transformers, underground pipeline, and associated contaminated soil. The former base, now known as Middletown Airfield, is operated by the Harrisburg International Airport. Plans for the property call for development of additional airport facilities.

PROGRAM EXECUTION

USACE helps the Army and DoD meet the challenge of protecting and cleaning up the environment through an organization that includes a headquarters, divisions, districts, laboratories, and centers of expertise. More than 93 percent of the USACE environmental staff is on the front lines in USACE districts, executing projects. The divisions supervise design districts that perform studies and create designs, and geographic military districts that manage projects and supervise construction. Cleanup activities at FUDS properties are supported by an HTRW center of expertise and an ordnance and explosives (OE) center of expertise (both of which are responsible for technical oversight) and by research and development laboratories. The USACE environmental program encompasses all four pillars of the Army's environmental program (Compliance, Restoration, Preservation, and Conservation) and has as its goals the prudent stewardship of taxpayer funds and the responsible protection of human health and the environment. The USACE environmental program budget has grown from approximately \$400 million in FY90 to more than \$1.32 billion in FY97. The FUDS share of the program's FY97 budget was \$255.9 million.



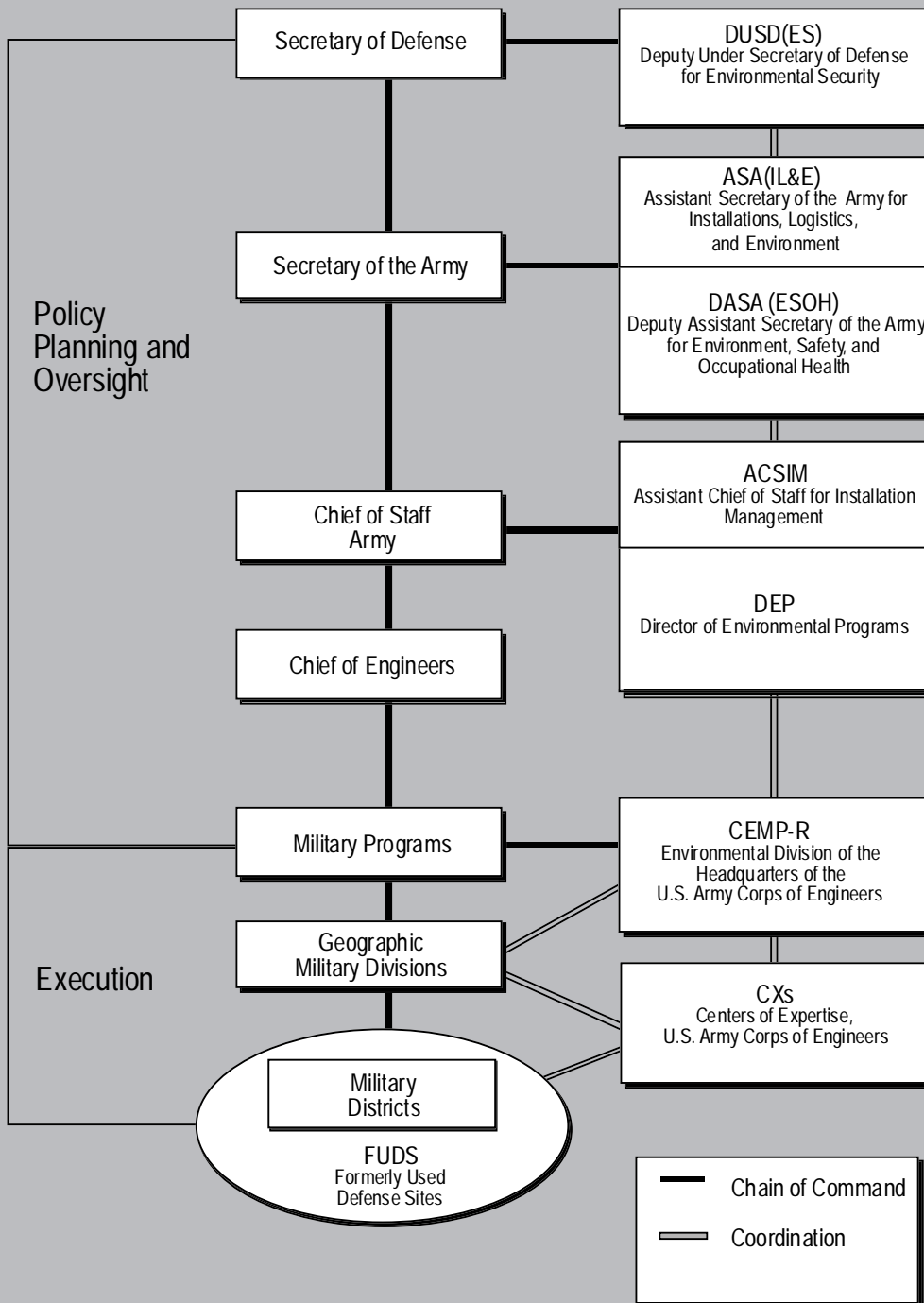
GOALS AND PRIORITIES

The goal of the FUDS program is to reduce, in a timely and cost-effective manner, risk to human health, human safety, and the environment resulting from past DoD activities at these properties. Meeting environmental goals for FUDS properties depends on strong communication, partnerships, and community involvement among DoD and project stakeholders. Priorities for the FUDS program are based on an evaluation of relative risk and other factors, such as legal agreements, stakeholder concerns, and economic considerations.

STRUCTURE OF SERVICE

DoD has responsibility for overall FUDS program policy and budget guidance, developing and defending the budget, and reviewing program performance. The Secretary of the Department of the Army is the executive agent and, through the Assistant Secretary of the Army (Installations, Logistics, and Environment) (ASA(IL&E)), supplements DoD policies and oversees the program. The Director of Environmental Programs within the Office of the Assistant Chief of Staff for Installation Management establishes general program goals and, in concert with ASA(IL&E), approves the annual work plan and program priorities. USACE headquarters is responsible for FUDS

Organizational Structure of the FUDS Program



program management and execution. The FUDS mission within USACE is executed by the field organization, which consists of 7 geographic military divisions, 18 military districts with necessary support from civil works districts, 1 HTRW center of expertise, and 1 OE center of expertise.

PROGRAM ACCOMPLISHMENTS

USACE continues to emphasize executing projects, cleaning up sites and ensuring that the public is an active participant in the cleanup process. Project execution figures for FY97 demonstrate that the FUDS program is making significant progress; 2,868 analyses/investigations, 858 Remedial Designs, 113 Interim Remedial Actions, 767 Remedial Action Constructions, 5 long-term monitoring efforts, 8 PRP projects, and 29 BD/DR projects were completed as of September 30, 1997.

Two success stories help illustrate the FUDS program's accomplishments in FY97.

AVCO Lycoming Superfund Site and Marathon Battery Corporation. Under the FUDS program, a PRP determination is made when parties in addition to DoD may have contributed to contamination at a site. The Avco Lycoming Superfund Site in Williamsport, Pennsylvania, and the Marathon Battery Corporation in New York are National Priorities List properties that have involved other PRPs in cleanup. After a number of studies and negotiations, USACE worked in partnership with these other PRPs, the Department of Justice, and several other

governmental agencies to determine liability. Settlement agreements reached in FY97 allowed the two properties to be restored to environmentally sound condition. Thereafter, the Defense Environmental Restoration Program (DERP)-FUDS response actions at these two properties were completed and closeout reports were prepared.

The Former Camp Maxey. Visitors to a popular lake and camping area in northeast Texas are finding the area much safer since USACE completed an ordnance removal project there. In a 2-month period, USACE removed more than 2,000 unexploded ordnance items from the former Camp Maxey, now a federal recreational facility, surrounding Pat Mayse Lake.

The removal project began after a lengthy drought revealed large amounts of unexploded ordnance at the lake's edge. The project removed ordnance from two critical areas, one area around the lake that had been used as a rocket launcher and rifle grenade area and a second area now used by all-terrain-vehicles. Because of the ordnance, both areas were deemed to pose a serious safety threat to the public.

Public safety was the top priority during the cleanup process. Public access was restricted within work areas, and all work ceased if anyone entered the work zone. During the project, USACE removed and disposed of 2,095 pieces of unexploded ordnance and 1,179 nonexplosive ordnance items. USACE also removed 4,676 pounds of scrap. The project was completed for less than the \$400,000 originally budgeted. The savings were used to clear more land in the all-terrain-vehicle area.

MANAGEMENT INITIATIVES AND IMPROVEMENTS

USACE continues to conduct initiatives to improve efficiency and effectiveness in the use of its personnel and financial resources, administrative processing of resource documents, functional consolidation of resource responsibilities, and contracting.

In FY97, USACE redrafted the *FUDS Program Manual* to make it consistent with new DoD DERP/BRAC Environmental Restoration Program Management Guidance. It also implemented a FUDS version of the cost-to-complete/RACER II model for HTRW, CON/HTRW, and BD/DR projects and developed an OEW cost-to-complete model in RACER.

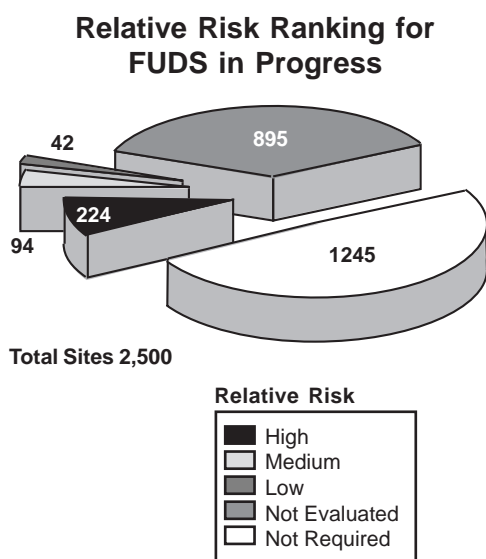
USACE has initiated a new cost management program to ensure that FUDS projects are executed at the lowest reasonable cost. Under

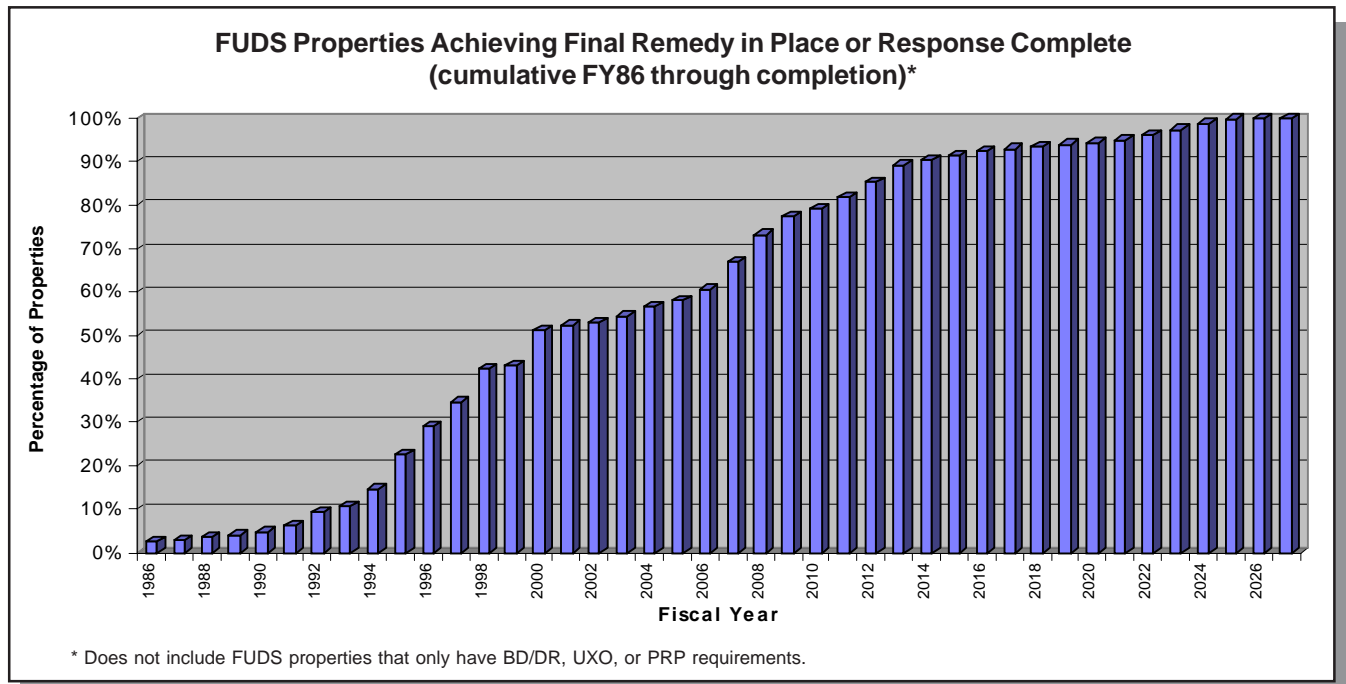
this program, USACE determines the precise details of the work involved in various cleanup techniques and the work's typical cost.

The recent USACE reorganization has contributed to resource and organization efficiencies, which are expected to extend the usefulness of future environmental funding. USACE management and support costs for the FUDS program fell to approximately 9 percent of total program costs, meaning that 91 percent of the environmental dollars received goes directly toward project cleanup at USACE districts.

RELATIVE RISK IMPLEMENTATION

New projects are continually added to the FUDS program. USACE strives to evaluate as many projects as possible for relative risk to human health and the environment. As of the end of FY97, 26 percent of the 890 eligible HTRW projects do not require relative risk evaluation because they have achieved Response Complete or Remedy in Place status. Another 31 percent of eligible HTRW projects have relative risk ratings and the remaining 43 percent, which are ready for Site Inspection, require future funding for data collection and relative risk evaluation. For CON/HTRW projects, removal of abandoned underground storage tanks has proved to be the most appropriate and cost-effective response. Thus, when funding becomes available, USACE will pursue response actions at these sites instead of conducting expensive field sampling for relative risk evaluation. USACE has completed response actions for 51 percent of the 1,212 eligible CON/HTRW projects. Another 6 percent of the eligible CON/HTRW projects have been evaluated for relative risk, and the





remaining 43 percent require future funding for necessary Removal Actions.

USACE also is required to evaluate OEW projects for relative risk to human safety. The OEW risk assessment is composed of two key parts: hazard severity assessment and hazard probability assessment. Both are based on the best available information from record searches, reports of explosive ordnance disposal teams, field observations, interviews, and actual measurements. Of the 1,451 eligible OEW projects in the FUDS program, 533 have reached either Response Complete or Remedy in Place status and therefore no longer require relative risk assessment. Relative risk assessment codes have been established for the remaining 918 OEW projects to indicate their potential impact on human safety.

Ratings of relative risk to human health, human safety, or the environment for HTRW, CON/HTRW, and OEW projects have been used, along with other risk management factors, to aid in sequencing work during FUDS planning, programming, budgeting, and project execution.

INFORMATION AND TECHNOLOGY TRANSFER

USACE is using innovative technologies to reduce the cost of environmental restoration for more than 200 projects, including those at FUDS.

Two innovative tools being used by the USACE OE Center of Expertise in Huntsville, Alabama, are the Site Stats/Grid Stats program (Site Stats) and the Ordnance and Explosives Cost-Effectiveness Risk Tool (OECert). Both tools are paying dividends for the FUDS program.

The Site Stats computer program statistically models the engineering evaluation/cost analysis site characterization process. Use of this program, which is loaded on a laptop computer and used at the site, has reduced sampling costs for site characterization.

Because Site Stats is based on complex statistical techniques, such as the sequential probability ratio test, USACE needs fewer data to obtain the same level of outcome certainty provided by most standard statistical methods. The software used in Site Stats also provides a statistical stopping point in the response action and can be used to verify that response action requirements have been met.

OECert is a mathematical model that calculates individual and public risk of exposure to unexploded ordnance. Individual risk is the probability of a person being exposed to ordnance during a given activity. Public risk is the sum of all the individual risks. As a common methodology for all sites, OECert provides decision makers with objective data, that is, a numerical value for risk reduction at a given site. Such data can help decision makers rank sites for cleanup and determine the amount of cleanup needed to reach an acceptable risk level.

OECert applications include the following:

- ◆ Developing baseline risk estimates
- ◆ Determining different risks for each response alternative
- ◆ Developing rough order-of-magnitude costs for each response alternative
- ◆ Fitting response alternatives to costs
- ◆ Ranking response alternatives at a site
- ◆ Ranking all sites according to risk.

One FUDS project where use of an innovative technology has produced dramatic results is located just north of the Kennedy Space Center in Fernandina Beach, Florida. This former Air Force Reserve Center had been used as a landfill and for gunnery ranges and is now a softball and soccer field. Earlier tests at the property had revealed several areas where the potential for contamination existed. Because the areas

were few and minimal contamination was expected, USACE brought in a Geoprobe, a small vehicle resembling a golf cart with a probe on its back.

The Geoprobe was driven around the site and tested the areas for suspected contamination. The probe pushed into the ground down to the water table and pulled up a continuous column of soil. The columns then were viewed to reveal the extent of any contamination and to check for buried materials. The Geoprobe revealed only a thin layer of contamination and proved that there was little landfill material. Because the probe pulled up only a small column of material, there was no damage to the athletic fields and no digging. Thanks to the Geoprobe, the project took only 6 months instead of 18 months and the total cost was \$45,000 instead of \$300,000.

OUTREACH

In addition to direct, day-to-day congressional interest in the FUDS program, expressed through both formal and informal inquiries, public involvement is vital to the program's success. USACE worked hard in FY97 to expand its community relations efforts, ensuring that the public is made aware of the FUDS program and of the opportunities to participate in the cleanup process.

Although every effort is being made to establish RABs at projects where there is sustained community interest, USACE recognizes that not all properties or projects lend themselves to RAB establishment. Nonetheless, some kind of community involvement and public outreach is necessary. FUDS project managers and public affairs specialists are using a wide variety of community involvement techniques to reach out.

The FUDS program has 17 active RABs and 4 active technical review committees (TRC). One

RAB has been deactivated. Six RABs were established in FY97, although several of these already existed as TRCs before they were converted to RABs.

A good example of RAB efforts is provided by the work of the former Weldon Spring Ordnance Works RAB. This RAB's 27 community members are striving to keep the community informed about cleanup efforts at Weldon Spring Ordnance Works, a former explosives production facility near St. Charles, Missouri. This facility manufactured trinitrotoluene (TNT) and dinitrotoluene (DNT) for use during World War II. To clean up the site, USACE and the Army are planning to excavate contaminated soil for on-site incineration. Other soil will be stabilized and disposed of in a landfill. The area surrounding the property has experienced both dramatic increases in population and an ever-increasing number of visitors because part of the area is used for fishing, hunting, and nature studies at the Busch and Weldon Spring Conservation Areas.

Members of the Weldon Spring RAB take the information they receive from USACE to other members of the community. At the same time, USACE provides information and technical training to the RAB members.

In addition to less formal RAB communications to the community, there have been public

meetings, open houses, information meetings, focus groups, poster stations, and even a professionally made videotape. Fact sheets, project newsletters, and a web site also provide information to the public.

"By keeping the community involved and informed on the day-to-day activities, we have gained its trust and respect," said Steven Iverson, USACE project manager and USACE RAB co-chair. Iverson noted that public concern about delays and cost overruns has been nonexistent because of the "proactive approach to community relations."

In addition to the RAB and traditional community outreach efforts, a formal partnering agreement was signed among all interested parties to the Weldon Spring cleanup. The agreement established a common vision and spelled out the various steps that must be included in order to achieve the five major goals of trust and mutual respect, open communication, safety, cost-effectiveness, and timeliness.

To help districts reach out to the public through establishment of RABs, USACE headquarters and the HTRW Center of Expertise developed a 12-hour RAB training program. The training was conducted in June at five regional locations: Seattle, Fort Worth, Atlanta, Omaha, and Baltimore. Attending the training were more

"INFORMATION FLOWS FREELY FROM USACE TO THE RAB. WHENEVER A TECHNICAL QUESTION COMES UP THAT WE CAN'T ANSWER, USACE HAS BEEN VERY WILLING TO PROVIDE THAT INFORMATION FOR US. THEY HAVE EVEN GONE SO FAR AS ALLOWING US THE OPPORTUNITY TO GO AND GET AN OUTSIDE CONTRACTOR TO PROVIDE SOME ADDITIONAL TECHNICAL TRAINING IN AREAS THAT WE DON'T FEEL COMFORTABLE WITH. WHETHER THE INFORMATION IS ON INCINERATION OR STABILIZATION, THEY HAVE MADE THOSE SERVICES AVAILABLE TO US AT THEIR EXPENSE. SO I'M VERY IMPRESSED WITH THAT."

—RONALD ROBINSON, RAB COMMUNITY CO-CHAIR, WELDON SPRING ORDNANCE WORKS,
WELDON SPRING, MISSOURI

than 100 FUDS program, project, and technical managers, as well as public affairs specialists. Participants were given the latest RAB guidance, information on how to successfully establish RABs, tips on how to involve the public affairs office, and instruction on risk communication techniques. Attendees discussed success stories and lessons learned and also participated in two role-playing exercises designed as mock RAB meetings.

In addition to the training, USACE developed a video, *Understanding the Formerly Used Defense Sites Program*, that explains the FUDS program and discusses methods of involving the community. The video, which is being used to educate potential RAB members, the general public, regulators, and congressional staff members, has been distributed to district and division offices as another tool they can use in reaching out to the public.

DERP FUNDING

FY97 was the first year since the devolvement of Defense Environmental Restoration Account (DERA) funds. These funds, which were once allocated to a central DoD account, are now distributed into five separate accounts, including one for FUDS. Before the devolvement, the FUDS program was historically underfunded compared with the environmental restoration efforts at active installations, because requirements were not easily identified. Now that FUDS requirements are better known, the FUDS program should be better able to compete for resources. Congress has recognized the importance of the FUDS program and sanctioned a budget increase for the FUDS program in FY97. Program managers have predicted a requirement of at least \$300 million per annum in order to complete the FUDS cleanup in 30 years.

